

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICANT: GANDEL; Pierre

SERIAL NO.: 10/505,246

ART UNIT: 2834

FILED: April 22, 2005

EXAMINER: Preston, E.D.

TITLE: LINEAR ACTUATOR COMPRISING A BRUSHLESS POLYPHASE ELECTRIC
MOTOR

Amendment E: REMARKS

Upon entry of the present amendments, previous Claims 45 - 53 have been canceled and new Claims 54 - 61 substituted therefor. Claims 1-44 were canceled in previous amendments. Reconsideration of the rejections, in light of the forgoing amendments and present remarks, is respectfully requested. The present amendments have been entered for the purpose of conforming the application to the Examiner's requirements and for the purpose of more clearly distinguishing the present invention from the prior art.

In the Office Action, the drawings were objected to under 37 C.F.R 1.83(a). In particular, the Examiner has stated that the drawings fail to show the "linear actuator with the fixed threaded rod and a nut carried by the rotor with an independent reversible reduction mechanism cooperating with the driving means". Claims 45 - 53 were rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement. In particular, it was indicated that the specification does not have a written description to enable the linear actuator with the fixed threaded rod and a nut being carried by the rotor with an independent reduction mechanism cooperating with the driving means. In particular, "the fixed shaft actuator having the linearly moving rotor of Figure 3 cannot be incorporated into the independent reduction gears of Figures 4 -8".

As an overview to the present reply, Applicant has revised previous independent Claim 45 in the form of new independent Claim 54. In particular, new independent Claim 54 has canceled the portion which recites "said driving means comprising a screw and nut system in which said rotor has an axial bore, said axial bore having the nut therein, the screw being a threaded rod engaged coaxially with the nut, said nut being carried by said rotor, said threaded rod being fixed, said nut being movable in a helical direction under said stator, said nut transmitting linear displacement to said control organ." The phrase "said driving means having an independent reversible reduction means cooperative therewith" appears to be duplicitous with respect to the previous recitation of "a reversible mechanism being independent of and cooperative with said driving means". This new independent Claim 54 reflects the original limitations of Claims 1, 5 and 11 from the original application. Applicant respectfully contends that since the objectionable subject matter has been removed from the independent claim, the present application would be in a proper condition for allowance.

Fundamentally, the prior art Miller patent does not teach the "independent reversible reduction means". The balls and ball nut are the "driving means" in the Miller patent. The balls and ball nut of the Miller patent are designed for converting the rotational motion of the rotor into linear movement of the shaft. In the Miller patent, there is no "independent" reversible reduction device. As such, there is no "reversible reduction mechanism" that is "cooperative with and independent of the driving means".

In some cases, it is necessary to obtain an important reduction between the rotation of the rotor and the linear displacement of the actuator or shaft. In the case of devices employing screws and nuts, as described in the prior art patents cited by the Examiner, the threads per inch ("pitch")

must be so high to obtain this important reduction such that the system would no longer be reversible. In contrast, in the present invention, there is a "independent reversible reduction mechanism" cooperative with another device, i.e. the driving means. It is designed to be capable of converting the rotational motion of the rotor into a linear movement and in a reversible manner. This was stated in paragraphs [0067] - [0066] of the original specification as follows:

Furthermore, it has advantageously been devised to distinguish, at least partly, the motion-conversion and reduction functions, by associating with said driving means 5 and independent reversible reduction device 43.

As can be seen in figures 4 and 5, such a reversible reduction device can adopt the form of an epicyclical gear 44 through which rotor 4 attacks, according to the embodiment of figure 4, the nut 16 engaged with the threaded rod 17, the latter being designed with a large pitch and therefore perfectly reversible. In the design according to figure 5 is used a system 14A comprised of a roller 40 and a cam 41.

As such, the present invention provides an "independent reversible reduction mechanism" that is cooperative with the "driving means". This would be neither shown nor suggested in the prior art Miller patent, or any of the other previously recited references.

Dependent Claims 55 - 57 correspond, respectively, to the limitations of previous dependent Claims 46 - 48. New dependent Claim 58 - 61 correspond, respectively, to the limitations of previous dependent Claims 50 - 53.

Upon the entry of the present amendment, it can be seen that the objectionable manner recited in the Official Action has been corrected. In particular, the references to the fixed threaded rod and the nut have been removed from the independent Claim 45. Applicant respectfully contends that the present amended Claim 54 is distinguishable from prior art Miller patent. On this basis, Applicant respectfully contends that the present claims are patentable distinguishable from the prior art.

Based upon the foregoing analysis, Applicant contends that independent Claim 54 is now in proper condition for allowance. Additionally, those claims which are dependent upon independent Claim should also be in condition for allowance. Reconsideration of the rejections and allowance of the claims at an early date is earnestly solicited. Since no new claims have been added above those originally paid for, no additional fee is required.

Respectfully submitted,

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